

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
LightSquared Subsidiary, LLC	)	IB Docket No. 11-109
	)	
Application for Modification of Its Authority	)	
for an Ancillary Terrestrial Component	)	
	)	

**COMMENTS OF SPRINT NEXTEL CORPORATION**

**I. INTRODUCTION AND SUMMARY**

Sprint Nextel Corporation (“Sprint”) respectfully submits these comments in response to the June 30, 2011, Public Notice seeking responses to the final Federal Communications Commission (“Commission”)-mandated report of the technical working group co-chaired by LightSquared and the United States Global Positioning System (GPS) Industry Council (USGIC).<sup>1</sup> Sprint participated actively in the technical working group process and welcomes the opportunity to comment in response to the technical working group report.

As explained in greater detail below, recently Sprint entered into a fifteen-year spectrum hosting and network services agreement with LightSquared along with an option to purchase wholesale 4G capacity from LightSquared. Like other wireless carriers, Sprint relies heavily on end-user geo-location chipsets and precision-timing mechanisms, whose functionality depends on the continued reliability of Global Positioning System (GPS) satellite transmissions. By bringing the GPS technical review process to a close, and allowing LightSquared and the GPS community to collaborate on

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<sup>1</sup> FCC Order and Authorization, DA 11-133, IB Docket No. 11-109, 26 FCC Rcd 566, 588, ¶ 48 (International Bureau rel. January 26, 2011).

mutually agreeable solutions to the challenges that the process has identified, the Commission has a rare opportunity to increase the utility of a valuable national resource, expand the potential availability of wireless broadband services across the United States, and safeguard incumbent GPS users against harmful interference.

## **II. SPRINT HAS AGREED TO PROVIDE SPECTRUM-HOSTING AND NETWORK MANAGEMENT SERVICES TO ASSIST LIGHTSQUARED IN IMPLEMENTING ITS PROPOSED TERRESTRIAL BROADBAND SERVICE.**

LightSquared and Sprint have entered into a fifteen-year agreement that includes spectrum hosting and network services, a 4G wholesale option and 3G roaming services. Under the terms of the spectrum hosting and network services agreement, Sprint has agreed to host and manage the terrestrial portion of LightSquared's prospective integrated satellite-terrestrial 4G broadband network in conjunction with Sprint's previously-announced modernization and consolidation of its existing radio access networks.<sup>2</sup> This initiative, Sprint's "Network Vision," utilizes state-of-the-art spectrum agile and flexible radio access technology to more effectively deploy Sprint's spectrum assets resulting in improved coverage, increased capacity and enhanced network quality at lower cost and reduced environmental impact.

Sprint currently uses separate equipment to deploy services on its 800 MHz spectrum, 1.9 GHz spectrum and, through its relationship with Clearwire, 2.5 GHz spectrum. Under the terms of the Network Vision plan, however, Alcatel-Lucent, Ericsson, and Samsung will install new network equipment and software that brings

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<sup>2</sup> Sprint Announces Network Vision – A Cutting-Edge Network Evolution Plan with Network Partners Alcatel-Lucent, Ericson and Samsung, Press Release dated December 6, 2010 at <http://newsroom.sprint.com/news/sprint-announces-network-vision-network-evolution-plan.htm>. See also Sprint Nextel's network Vision Information Center at [http://newsroom.sprint.com/press\\_kits.cfm?presskit\\_id=19](http://newsroom.sprint.com/press_kits.cfm?presskit_id=19).

together multiple spectrum bands on a single, multi-mode base station. The new Network Vision multi-mode base stations not only require less space and consume less power than earlier models but also include the ability to use spectrum bands with different technologies as well as the ability to “host” spectrum bands licensed to and controlled by other carriers at a greatly reduced cost to such carriers. As a result, Sprint’s multi-billion dollar investment in Network Vision provides a means for Sprint to reduce its overhead, improve and extend its services, and establish new revenue sources from carriers, such as LightSquared, that seek to deploy or expand their broadband footprints in the United States.

Sprint also is a major user of GPS receivers. Its business relies upon GPS to obtain essential synchronizing measurements to ensure the proper operation of the tens of thousands of base stations and other elements that comprise the Sprint network, as well as successful GPS performance to support tens of millions of end-user devices with E911 location information and other location based services and applications. Sprint is, therefore, in a unique position to offer constructive comments in this proceeding. As host to the LightSquared network, Sprint stands to benefit from LightSquared’s proposed operations. As one of the country’s larger users of GPS devices and timing equipment, however, Sprint may suffer if LightSquared’s proposed operations were, in fact, to cause harmful interference to the GPS signals that are essential to Sprint’s business and to its customers. With both considerations in mind, Sprint respectfully offers the following comments in response to the June 30 Public Notice.

**III. THE COMMISSION SHOULD IDENTIFY, ASSIGN, AND BRING INTO USE ALL REASONABLY AVAILABLE SPECTRUM RESOURCES TO MEET GROWING WIRELESS BROADBAND DEMAND.**

All major wireless carriers are facing increasing data demands on their networks, prompting calls for additional spectrum to assist carriers in increasing the data services capacity of their networks.<sup>3</sup> The National Broadband Plan captured this dynamic, noting that, “The growth of wireless broadband will be constrained if government does not make spectrum available to enable network expansion and technology upgrades.”<sup>4</sup> Importantly, the National Broadband Plan characterized this call as a spectrum-planning challenge that should commence soon to ensure adequate spectrum availability in the future where demand increases will be the greatest.<sup>5</sup> The hallmark of the National Broadband Plan’s spectrum policy recommendations was the goal of making 500 megahertz of spectrum “newly available for broadband use within the next 10 years.”<sup>6</sup> Recognizing the unique characteristics of ‘low-band’ spectrum for mobile broadband uses, the National Broadband Plan further recommended making 300 megahertz of spectrum between 225 MHz and 3.7 GHz available within the next five years.

The vertically integrated Twin Bells, Verizon and AT&T, already have

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<sup>3</sup> Acquiring additional spectrum is, of course, only one way to increase capacity. Carriers have access to numerous tools to increase network capacity by employing spectrally efficient technologies and network architectures. *See, e.g.*, Declaration of Steven Stravitz, attached to Sprint Nextel Petition to Deny, WT Docket No. 11-65, ¶ 42 (May 31, 2011) (Identifying spectrum as only one of three levers – and the one that has the lowest average downlink throughput gain – available to increase network capacity); Federal Communications Commission, “Mobile Broadband: the Benefits of Additional Spectrum,” FCC Staff Technical Paper, at 7 (October 2010) (Indicating that additional capital expenditures “to build new cell-sites and develop and implement more efficient wireless technologies” are “substitutable” for new spectrum as solutions to increase network capacity.)

<sup>4</sup> *See* FCC, “Connecting America: The National Broadband Plan,” at 77 (rel. March 16, 2010), available at: <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“National Broadband Plan”).

<sup>5</sup> *Id.* at 75-76.

<sup>6</sup> *Id.* at 75.

acquired the vast majority of highly desirable “beachfront” spectrum in the United States. To try to keep pace with the Twin Bells’ superior spectrum holdings, greater capitalization, and exclusive access to uniquely valuable wireline network infrastructure from the monopoly “Ma Bell” era, Sprint and other independent competitors have had to identify any reasonably promising spectrum alternatives and apply ingenuity, diligence and financial capital to make these alternatives viable. From the 800 MHz band to the 2.5 GHz band, Sprint has led the industry in identifying and developing new spectrum resources, often through innovative, high-risk processes.

In this sense, the 1.6 GHz L-Band that LightSquared seeks to develop to provide terrestrial wireless broadband capacity on a wholesale basis to “retail” carriers is no different. The Commission noted quite properly that developing the L-Band spectrum poses challenges.<sup>7</sup> Moreover, numerous commenters have voiced concern that LightSquared’s plan to offer enhanced terrestrial use of its mobile-satellite service spectrum potentially could have harmful consequences to GPS reception. In response, the FCC developed and initiated a detailed process to encourage “cooperative and candid discussions” where the free exchange of information and concerns would allow the parties to assess the “potential for overload interference to GPS devices from LightSquared’s terrestrial network” and then identify the measures necessary to avoid that interference.” The FCC’s thoughtful and inclusive approach is precisely the type of

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<sup>7</sup> Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 ¶ 2 (2003) (“*ATC Report and Order*”) (noting that the decision to allow service in the L-band requires balancing the goals of “effective and efficient use of spectrum with preserving the optimal amount of spectrum for the provision of international satellite services” and lamenting that, “At bottom, the Commission must choose between two alternatives.”)

transparent process that will lead to efficient and successful outcomes for all stakeholders. The Commission should bring this process to a rapid conclusion to provide all parties with the certainty they need to move forward.

**IV. IN TAKING MEASURES TO MAXIMIZE THE UTILITY OF THE NATION’S SPECTRUM RESOURCES FOR THE PUBLIC, THE COMMISSION AND NTIA HAVE NOTED THAT BOTH TRANSMITTERS AND RECEIVERS CAN BE RESPONSIBLE FOR HARMFUL INTERFERENCE.**

Both the Commission and NTIA have developed rules to ensure that various radio services operate compatibly in the same environment without unacceptable levels of radio frequency interference.<sup>8</sup> However, as NTIA long ago noted, these “regulations generally focus on sharing spectrum and the interfering potential of transmitters. Less attention has been given to the regulation of receiver parameters and associated non-co-channel interference issues.”<sup>9</sup> NTIA further observed that, for federal uses, its oversight has long extended to “the performance of both the transmitter and the receiver” and, accordingly, NTIA has promulgated a long list of receiver performance standards for Federal users for radar and most non-tactical, fixed and mobile systems, especially for the more heavily congested bands. “This approach [of stressing both parts of the interference equation],” NTIA stated, “emphasizes prevention of interference and improved spectrum management.” While properly recognizing that every situation requires its own detailed analysis, NTIA concluded that “With the increased use of the spectrum and the increase in the number of potentially incompatible services utilizing the same or adjacent bands,

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<sup>8</sup> Assuring that radio communications work as desired without causing interference to other radio operations is a fundamental objective of the Communications Act and the Commission’s spectrum management authority. 47 U.S.C. 301.

<sup>9</sup> See NTIA, “Receiver Spectrum Standards: Phase 1 – Summary of Research into Existing Standards,” NTIA Technical Paper, at iv (rel. November, 2003), *available at*: <http://www.its.bldrdoc.gov/pub/ntia-rpt/03-404/03-404.pdf>.

this interference will likely get worse” unless “*all significant factors [are] assessed*, including potential improvements in spectrum utilization efficiency and cost impact.”<sup>10</sup>

Since at least 2004, the Commission has taken much the same approach, determining in several cases that an incumbent operator’s network design and equipment performance must also be considered in determining the optimal resolution of an interference concern. Thus, in addressing assertions that the 800 MHz “interference problem” was the “sole cause” of a CMRS licensee, the Commission sternly rejoined that “the interference problem has not been ‘caused’ by any single party – Nextel, cellular or public safety – but rather has been caused collectively by the proximity of all of these parties to one another in the 800 MHz band, even though all parties are operating in compliance with the Commission rules.”<sup>11</sup> In resolving the interference dispute in the 800 MHz band, therefore, the Commission was intent on achieving a solution that was “equitable” to all parties and imposed “minimum disruption to the activities of all 800 MHz band users,” thereby maximizing the value of the spectrum for all users.<sup>12</sup> In this sense, the Commission sought a compromise that divided responsibility between transmitting and receiving parties and stipulated what steps each respective party should take.<sup>13</sup> Thus, for example, the Commission required 800 MHz commercial cellular operators to protect 800 MHz public safety communications systems from certain kinds of interference, *provided* that the public safety systems meet certain operating parameters

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<sup>10</sup> *Id.* at 39.

<sup>11</sup> *In the Matter of Improving Public Safety Communications in the 800 MHz Band*, WT Docket No. 02-55, ET Docket No. 00-258, ET Docket No. 95-18, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 ¶ 300 (2004) (“800 MHz R&O”).

<sup>12</sup> 800 MHz R&O ¶2.

<sup>13</sup> 800 MHz R&O ¶3.

necessary to achieve reliable communications in the often-congested 800 MHz radio frequency environment.<sup>14</sup>

Thus, the Commission's current rules and policies embody the principle that resolving interference can – on a case-by-case basis -- be a mutual responsibility of the transmitting and receiving parties. While operating requirements speak specifically to transmitter operating responsibilities, charging licensees with taking “reasonable precautions to avoid causing harmful interference” in their transmissions,<sup>15</sup> the rules also portray interference resolution as a cooperative undertaking, with mutual responsibilities. For example, the Commission's rules governing the assignment of frequencies in certain services under Part 90 of its regulations state that, “All applicants and licensees shall cooperate in the selection and use of frequencies in order to reduce interference and make the most effective use of the authorized facilities. Licensees of stations suffering or causing harmful interference are expected to cooperate and resolve this problem by mutually satisfactory arrangements.”<sup>16</sup>

In this vein, the Commission has rejected proposals that sought to impose burdens on only one party involved in an interference dispute.<sup>17</sup> For instance, in addressing interference in the highly interleaved 2500-2690 MHz band, the Commission noted that giving adjacent channel licensees “veto power” would hamper the “ability of

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<sup>14</sup> 800 MHz R&O ¶¶19-20.

<sup>15</sup> 47 C.F.R. § 90.403(a), (e) (2010).

<sup>16</sup> 47 C.F.R. § 90.173(b) (2010).

<sup>17</sup> See, e.g., *In the Matter of Improving Public Safety Communications in the 800 MHz Band*, Report and Order and Order and Further Notice of Proposed Rulemaking, WT Docket 02-55 ¶ 51 (June 10, 2009)(concluding that “there are steps MSS entrants and BAS licensees may be able to take to operate cooperatively in the same spectrum.”).

MDS and ITFS licensees to deploy broadband services.”<sup>18</sup> The Commission rejected a similar ‘receiver’s veto’ in the case of the 800 MHz band, noting that it would “make it virtually impossible for CMRS systems to use channels that contribute the slightest amount of noise to a public safety receiver in the far fringes of its noise-limited coverage area” and thus result in “inefficient utilization of CMRS spectrum.”<sup>19</sup> In the *800 MHz R&O* the Commission likewise rejected solving interference concerns strictly by regulating transmitters; indeed, it explicitly recognized “the role that receiver characteristics play in the interference calculus” and prescribed rules with appropriate responsibilities for both parties.<sup>20</sup> In these cases, the Commission’s interest in promoting innovative and productive new services counseled against “across-the-board” restrictions on transmitter operation.

The technical working group reports suggest that many of today’s GPS receivers are susceptible to interference from LightSquared’s prospective 1.6 GHz operations, particularly if LightSquared is operating in the upper part of its spectrum. Consistent with the precedents discussed above, the Commission should continue to work with both LightSquared and adjacent band incumbent GPS operators and GPS equipment providers to: (1) facilitate the development of improved, more interference-resistant GPS receivers; and (2) identify and deploy solutions that permit LightSquared to initiate commercial operations in the lower portion of the L Band, consistent with its recommendations to the Commission accompanying the technical working group reports.

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<sup>18</sup> See Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, Report and Order and Further Notice of Proposed Rulemaking, WT Docket No. 03-66, 19 FCC Rcd 14165 ¶22 (2004) (“BRS/EBS R&O”).

<sup>19</sup> 800 MHz R&O ¶ 94.

<sup>20</sup> 800 MHz R&O ¶ 19.

Thus, Sprint supports the Commission's effort to permit LightSquared to use its spectrum to offer commercial services after it has addressed GPS interference concerns. Sprint's technical staff actively participated in all stages of the Commission-mandated TWG to analyze the potential for interference and to search for potential solutions. The overall process worked well, and many devices were tested.

Specifically, Sprint agrees with the TWG conclusion that operations in the lower portion of the L-band are much less likely to cause GPS interference than operation in the upper portion of the L-band, as LightSquared originally proposed. As such, Sprint supports LightSquared's proposal to: 1) operate at lower power than permitted by its existing FCC authorization; 2) agree to a "standstill" in the terrestrial use of the Upper 10 MHz frequencies immediately adjacent to the GPS band; and 3) commence terrestrial commercial operations only on the lower 10 MHz portion of its spectrum while addressing workable solutions for legacy high precision receivers and other devices that may be at risk.

## **V. CONCLUSION**

While additional technical challenges should be explored, Sprint believes LightSquared, in cooperation with the Commission and adjacent spectrum users, is taking proactive steps to address and work through these issues in a timely manner. The Commission should continue to work with all affected parties to complete its evaluation of the GPS interference issue as expeditiously as possible with the goal of permitting

LightSquared to initiate commercial operations in the lower portion of the 1.6 GHz spectrum with the necessary protections for legacy precision GPS applications.

Respectfully submitted,

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